

2 | IDENTIFYING AND ASSESSING THE LEC BOTTLENECK

It is instructive, at the outset of any examination into the character and extent of competition in the telecommunications industry, to consider the historical evolution of competition from an era of pervasive monopoly through the current and future environment in which a multiplicity of firms exist and, in some cases, compete in a number of key market segments.

- Prior to the FCC's *Carterphone* decision in 1968,¹⁶ the telephone service monopoly embraced virtually every element of the public network. As illustrated in Figure 2.1, the pre-divestiture Bell System owned and controlled virtually every element of the network, from and including the individual telephone instrument or business telephone system on the customer's premises, the wiring on the customer's premises, the loop interconnecting the customer's premises with the local telephone central office, the local interoffice switching and transport network, the interconnecting links between the local network and regional and national/international long distance networks, and those long distance networks themselves.
- The Bell System's monopoly also extended to the manufacturing of virtually all telecommunications equipment associated with its public network services, ranging from individual telephone sets, business key and PBX systems, central office switches, wire and cable, and interoffice and long distance transmission systems.
- In 1969, the Bell System's manufacturing affiliate, the Western Electric Company, sold the various Bell System operating units virtually all of the telecommunications equipment and supplies that they purchased, including nearly all customer premises equipment that was utilized by residential and business subscribers, and accounted for the dominant share of the US telecommunications equipment market.
- As of 1970, local Bell System operating companies owned some 83% of all US telephones, and together with the AT&T Long Lines Department (the long distance network operation of the pre-divestiture Bell System) accounted for some

16. *Use of the Carterphone Device in Message Toll Telephone Service*, 13 FCC2d 420 (1968). In its *Carterphone* decision, the FCC rescinded the outright prohibition of "foreign attachments" such as non-telco terminal equipment to the public telephone network.

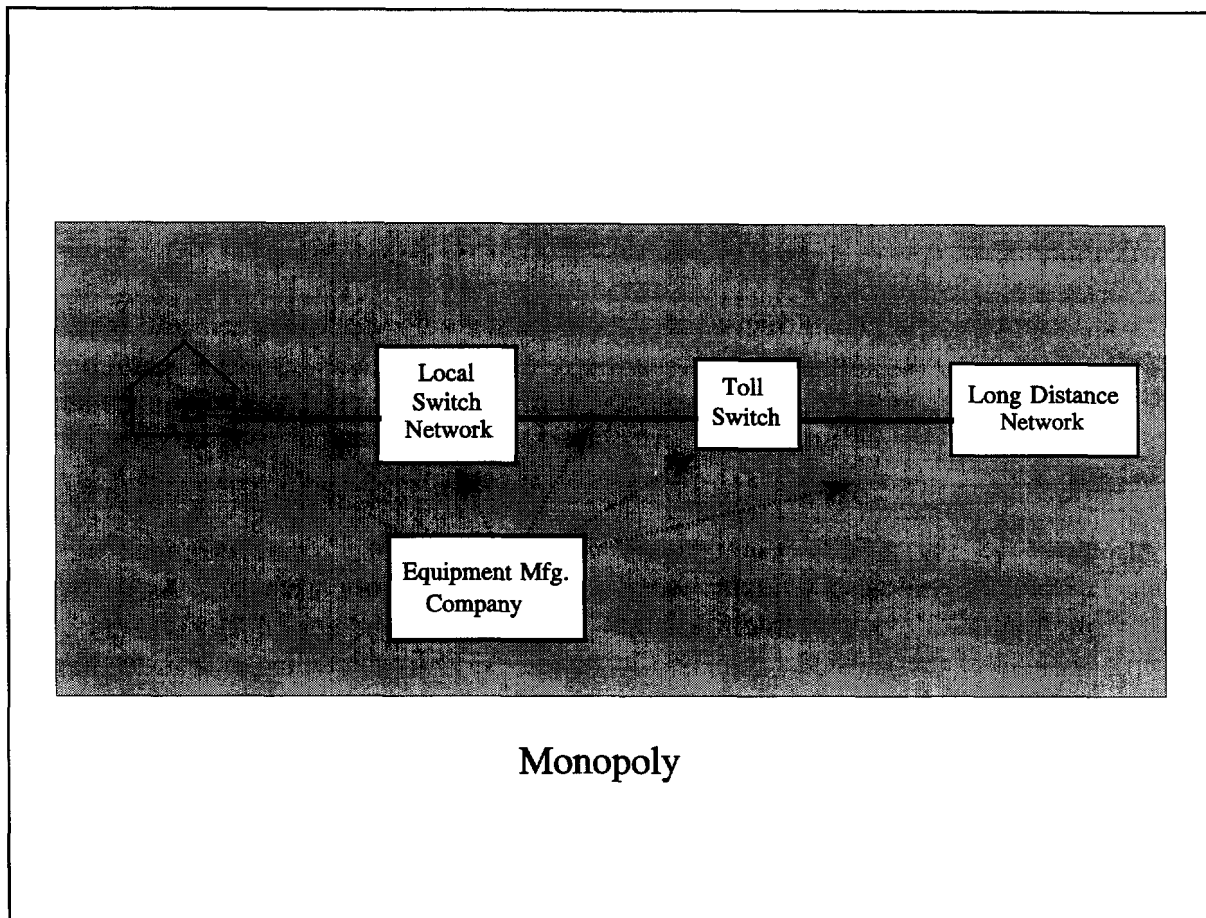


Figure 2.1. Predivestiture Bell System

84% of total telephone industry revenues.¹⁷

2.1 Origins of the local exchange monopoly

At the core of the Bell System's monopoly was its *local* telephone exchange service business. In the early years of its existence (and following the expiration of Alexander Graham Bell's original patents), numerous (then largely unregulated) local telephone companies competed with one another *within the same geographic area*, often along the

17. *Statistics of Communications Common Carriers*, FCC, 1970; *US Industrial Outlook*, US Dept. of Commerce, 1971.

same streets.¹⁸ Because these competing companies did not interconnect their lines with one another, a subscriber to one company's service usually could not place calls to, or receive calls from, a subscriber to a competing company's service. Since the value to any individual subscriber of a particular company's service was directly related to the number of *other* subscribers connected to its network,¹⁹ development of the most extensive customer base within a given community became a central goal of each rival firm. In some cases, as one company's market share would reach a "critical mass" with respect to its share of the overall market, customers of other firms would begin to coalesce around the dominant provider. But competition was fundamentally unstable, and the industry remained highly fragmented for a number of years.

In 1913, Theodore Vail, then Chairman of AT&T, proposed a plan that became known as the "Kingsbury Commitment" under which local telephone companies would accept government regulation as "public utilities" in exchange for grants of exclusive monopoly over defined service areas.²⁰ Under these "social contracts" between the "public utility" and its regulators, the telephone utility would be awarded an exclusive franchise to serve a given area. The franchise would receive government protection from competitive encroachment, in exchange for which the telephone utility would agree to furnish service to all who requested it at prices regulated by the government.²¹ The principle underlying the regulation of these prices was that the telephone utility, having been granted an exclusive monopoly, would not be enabled to abuse that monopoly by setting prices at monopoly levels, but would instead agree to earn only a "fair return" on its investors' capital. In

18. See, e.g., Brooks, John, *Telephone: The First Hundred Years* (New York: Harper & Row, 1975), Chapter 5, "Both Phones." Brooks notes (at 104) that "In some towns there were two telephone systems, not interconnected. A citizen who wished to be in touch with all other telephone users needed to have two phones and two directories; before making a call, he had to know which system the person being called was a subscriber to."

19. This property of networks (telecommunications or otherwise) is referred to in economic theory as an "externality of demand," because the value (marginal utility) of having a connection to the network for any individual customer is a function of the aggregate number of *other* customers who are also connected to the same network. Factors influencing those *other customers'* decisions to join or to remain connected to the network are *external* to the subject customer, yet will influence, to a potentially significant degree, the customer's demand for his or her *own* connectivity.

20. See Hyman, L., C. Toole, and R. Avellis, *The New Telecommunications Industry: Evolution and Organization*, (Public Utilities Reports, Inc. and Merrill Lynch Pierce, Fenner & Smith, Inc., 1987), at 80.

21. The local telephone company's franchise frequently included other rights and privileges, such as the right to condemn and take private property for rights-of-way and the right to construct overhead and underground wire lines on public streets and roads. On occasion, the local telephone franchisee has also received other government benefits, such as the FCC's grant of "wireline" cellular licenses to LECs on a largely non-contested basis. Amendment of Part 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems, *Report and Order*, 86 FCC 2d. 469 (1981), *on recon.* 89 FCC 2d. 58 (1982).

general, “fair return” implied that which would be available to investors in competitive industries with comparable risk and liquidity.²²

The economic theory underlying the “Kingsbury Commitment” was that local telephone service was a “natural monopoly” that could be furnished most efficiently by a single provider.²³ Under a “natural monopoly,” the production of certain types of services are by their nature subject to extreme economies of scale, usually stemming from the presence of high fixed costs.²⁴ As such, the *average cost* per unit of output continues to decline as the total quantity of service grows. For most “normal” goods and services, the fixed stock of capital (e.g., a factory, a group of machines, a plot of land, etc.) can efficiently support only a finite quantity of production output. So that as output grows, decreasing and ultimately diminishing returns will set in as illustrated in Figure 2.2 below. In the case of a “natural monopoly,” the point at which such decreasing returns arrive generally exceeds the total demand for the product or service as illustrated in Figure 2.3 below. In economic terms, this is the point where *average cost* is at its minimum and since this point lies beyond total demand, average costs continue to decline for all *relevant* levels of output. If more than one firm were permitted entry into this market, the theory holds, each would be required to acquire comparable amounts of fixed plant, the costs of which (for each firm) would necessarily have to be recovered over a smaller total quantity of output. For example, if two firms exist in a market, then each would (on average) account for half of the total output, implying that the average fixed cost component of each unit of output produced would be double that for the “one firm” case. By restricting entry to a single firm, overall societal investment in the fixed plant would thus be minimized and, with suitable regulatory constraints on the utility’s ability to price monopolistically, consumers would be able to purchase the service at a lower price than under “competitive” (i.e., multi-firm) conditions.

The presence of decreasing average costs, while a *necessary condition* for the “regulated natural monopoly” social contract solution, was not by itself sufficient: In addition, the service furnished by the firm in question had to be “affected with the public interest,” i.e.,

22. For a discussion of “fair rate of return” see Bonbright, J., A. Danielson and R. Kamerschen, *Principles of Public Utility Rates, Second Edition* (Public Utilities Reports, Inc., 1988), at 304-39.

23. See, e.g., *id.* at 17-25 for discussion of “natural monopoly”; also see Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, (New York: John Wiley & Sons, Inc., 1970), at 123-139.

24. “Fixed costs” in this context are those that do not vary materially with the quantity of service (output) furnished by the utility. It also implies a large *capital investment* relative to the total scale of the firm’s business activity, one that will remain in place for a number of years and whose costs cannot be readily avoided in the event of a significant decrease in total output.

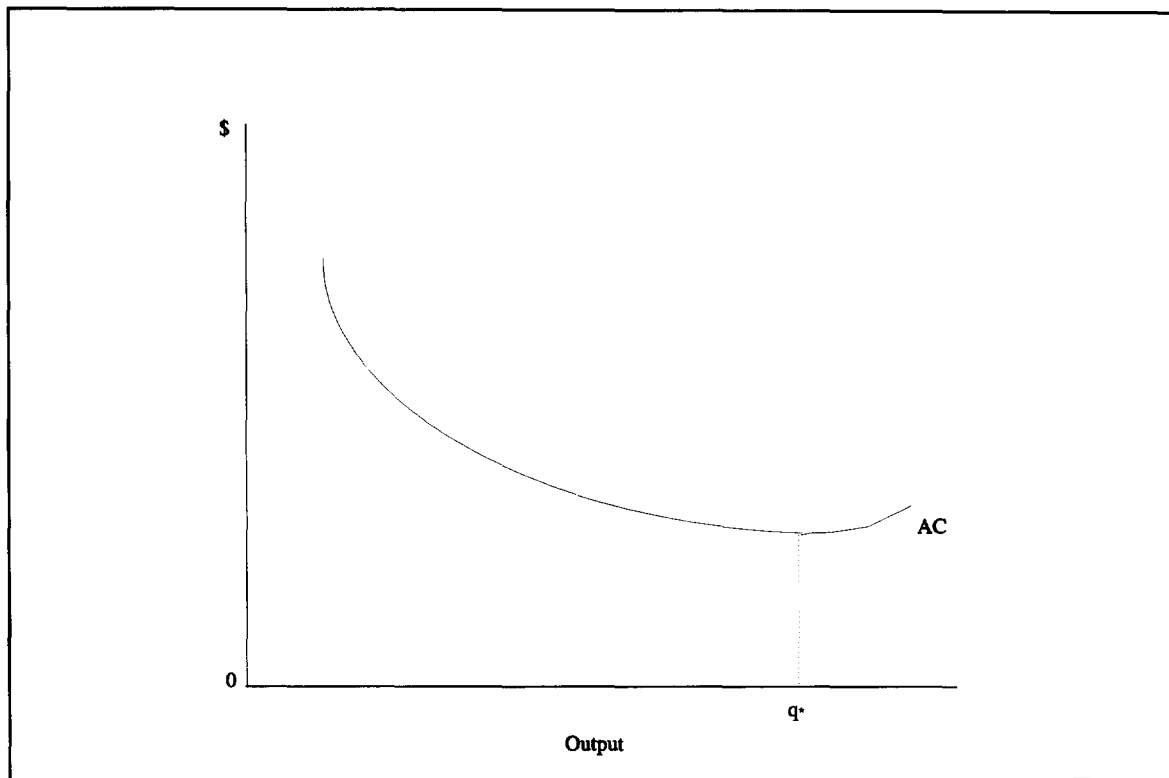


Figure 2.2. Normal Good

had to involve the provision of an essential public service.²⁵ Activities such as water and electric power distribution and common carrier transportation generally qualified for this status, as did telephone service.

As we shall discuss below, the modern view of “natural monopoly” is not the same as that which prevailed in the days of Theodore Vail and, in particular, the standards for qualifying for this treatment have become somewhat more limited than in the past. In part this change in attitude can be attributed to a recognition that “natural monopoly” is fundamentally a *static* concept, and the static gains arising from scale and scope economies may fall short of the potential *dynamic* gains that can result from aggressive competitive and innovation. Modern skepticism about the validity of the “natural monopoly” model can also be attributed to its abuse by many firms upon which that status has been conferred through vertical and horizontal integration of the core natural monopoly activity with other businesses that, standing alone, are in no sense characterized by decreasing costs over all relevant levels of output *or* the provision of an essential public service.

25. Bonbright, Danielson and Kamerschen, *op. cit.*, footnote 25 at 17-25. For an historical survey of prevailing economic thought on the necessary and sufficient conditions for “natural monopoly,” see Sharkey, William W. *The Theory of Natural Monopoly*, (Murray Hill, NJ: Bell Laboratories, Inc., 1982), at 12-20.

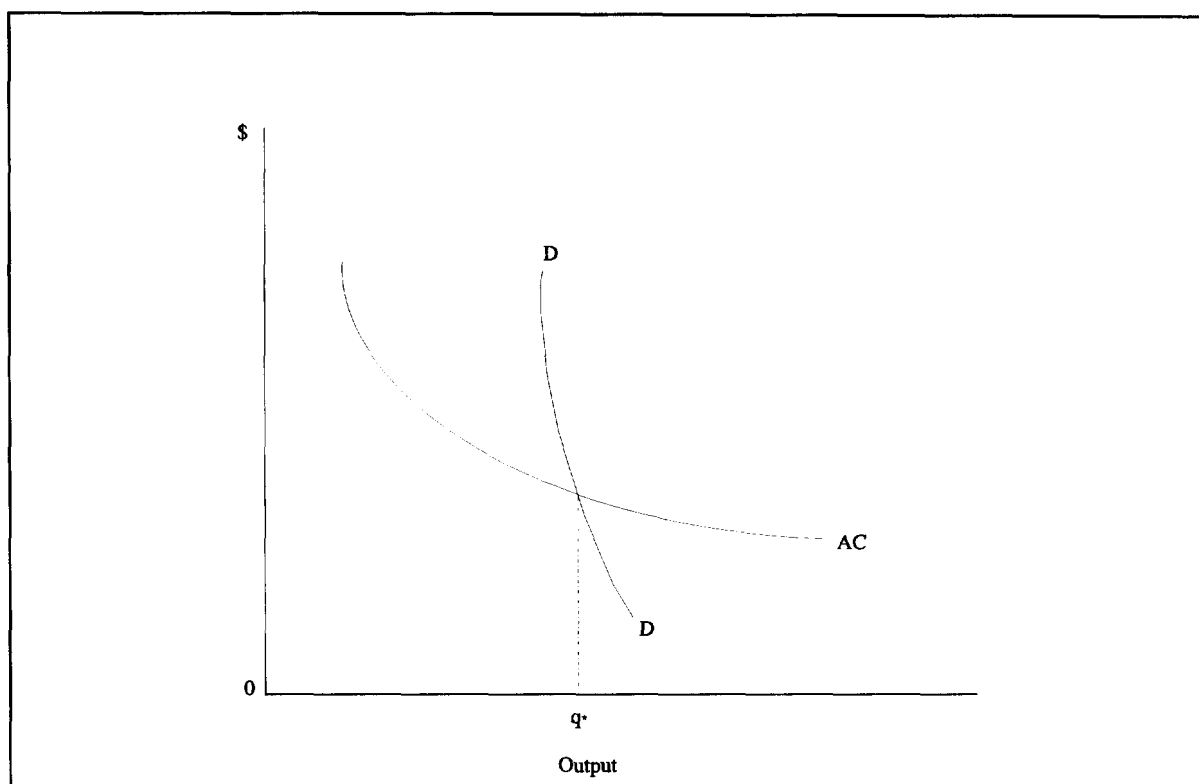


Figure 2.3. Natural Monopoly

2.2 Extension of the local exchange monopoly into adjacent markets

Through integration, firms possessing control over a core “natural monopoly” business (e.g., local telephone service) are able to extend that monopoly control into *adjacent markets* that are not, in their own right, monopolistic or, for that matter, “affected with the public interest” to anywhere near the same degree as a connection to the public local telephone network. An “adjacent market” is one that exhibits substantial dependency upon the core “natural monopoly” activity, but which by itself would not typically qualify for protected “natural monopoly” treatment. It is this capability of *controlling adjacent markets* that lies at the core of most industry structure debates and challenges to the “natural monopoly” concept that have pervaded the telecommunications industry in the US and elsewhere for nearly half a century. More specifically, it is the ability of the Bell Operating Companies to leverage their core local exchange monopoly into adjacent markets that served as the basis for the *Modification of Final Judgment* (MFJ) that broke up the former Bell System monopoly, and that now stands at center stage in current legislative initiatives to revise or remove the *MFJ*’s line of business restrictions.

Clearly, the single central principle underlying the *MFJ* is that the BOCs' ability to control essential facilities is constrained so as to limit the dominant local exchange telephone companies' ability to extend their monopoly into adjacent markets. In this regard, the *MFJ* addressed three such adjacent markets in particular — equipment manufacturing, customer premises equipment (CPE), and long distance ("interexchange") services. While addressing seemingly different and distinct aspects of the overall telecommunications milieu, there are a number of important parallels that can be drawn through an examination of these three adjacent markets.

Equipment manufacturing

The manufacturing of telecommunications equipment is, by itself, not unlike any number of other manufacturing activities and certainly would not satisfy any "natural monopoly/essential public service" standard. Yet prior to the break-up of the Bell System, *virtually all* purchases of telecommunications equipment by the Bell operating companies were made from Western Electric.²⁶ In effect, the protected monopoly status that had been conferred upon the individual BOCs with respect to the provision of local telephone service was *extended* to embrace the manufacturing function, because potentially competing suppliers were simply not afforded an opportunity to sell their products to Bell System companies.²⁷ By separating the provision of local telephone service from the manufacture of equipment used by the BOCs in the divestiture restructuring plan, the BOCs' ability to extend their monopoly into the adjacent manufacturing sector was effectively eliminated. No longer did the individual BOCs have an incentive to restrict their equipment purchases to products of Western Electric or any other affiliate, and Western Electric was forced to compete with other (non-affiliated) equipment manufacturers for BOC business.²⁸

26. Under the terms of a 1956 Consent Decree entered into between the Bell System and the Department of Justice, Western Electric was permitted to retain this exclusive arrangement with Bell System operating units on condition that it would not sell its products to others. *U.S. v. Western Electric Company and the American Telephone and Telegraph Company*, CA 49-17, 1956 Trade Cases (CCH) ¶ 68,246 (D. NJ., 1956).

27. This condition was underscored in a 1972 judicial ruling in a case brought by ITT to contest a similar relationship between GTE-Hawaiian Telephone Company and GTE's manufacturing affiliate, Automatic Electric. In that decision, the Court ruled that because of its special and exclusive relationship with the Bell System and its removal from the non-Bell equipment market, Western Electric was not part of the "relevant market" that ITT claimed GTE was attempting to monopolize. *ITT v. GTE Corp.*, 351 F. Supp. 1153 (D. Ha. 1972), *aff'd in part and rev'd in part*, 518 F. 2d 913 (9th Cir. 1975).

28. In fact, Western Electric's share of the equipment market has declined significantly since divestiture. The customer premises equipment (CPE) market is now populated with many players, and BOC's now purchase switches from multiple vendors.

Customer premises equipment

Like the manufacture of equipment, the retail supply of telephone sets, business telephone systems, and various specialty devices that are used in conjunction with telephone network services are not by themselves “natural monopolies” nor “essential public service” elements. Indeed, most electrical appliances and other devices may be “plugged in” to the electric utility’s service without restriction, and customers are allowed to select from a wide array of competitively-supplied alternatives with respect to such equipment.²⁹ However, prior to the FCC’s *Carterphone* ruling³⁰, local telephone company tariffs generally prohibited the “interconnection” of “foreign attachments” of any sort to the telephone company’s network. The “public” telephone network was thus entirely closed to interconnection of virtually any equipment or facilities not furnished by the franchised telephone utilities. As a result, customers were in virtually all cases required to *rent* (not purchase) all telephone-related equipment located on their premises from the telephone company and were offered choices among a highly limited number of products capable of performing a very small number of specific functions.

Carterphone rescinded the outright prohibition of such “foreign attachments,” but permitted the local telephone companies to require so-called “Protective Connecting Arrangements” (PCAs) as physical interfaces between the customer-provided equipment and the public network, ostensibly to protect against possible “harm to the network” that might result from the attachment of non-telco terminal devices. However, in practice the PCA requirement protected the local telephone companies against much more than any technical “harm;” they largely stifled any meaningful entry of effective competition into the CPE marketplace.³¹ As a technical matter, PCAs limited the flexibility with which new types of equipment could be introduced into the marketplace by competing CPE providers, particularly if the required type of PCA was not as yet available. The PCA also encouraged grossly inefficient technical solutions, such as acoustically-coupled modems that quite literally “talked” and “listened” through the handset of a telco-provided telephone set. The PCA also created a formidable economic barrier to most CPE competition. A typical voice-type PCA, which *had to be provided by the local Bell company*, would be furnished under tariff at a monthly “pay

29. Even where an electric utility was or is engaged in the business of retailing electrical appliances, consumers were never under any obligation to deal with the utility with respect to such purchases. In one case, an electric utility maintained the practice of providing electric light bulbs to its customers without specific charge, in effect *bundling* the light bulbs in with the price of electric service. That practice was declared unlawful by the United States Supreme Court.

30. *Carterphone*, *op. cit.*, footnote 16.

31. See, e.g., *Litton Systems, Inc. v. Am. Tel. and Tel. Co.*, 700 F.2d. 785 (2nd Cir., 1983).

forever” tariff rate of approximately \$6 plus an initial installation charge.³² In many cases, the monthly charges for the required PCAs actually *exceeded* the monthly charges for the telco-supplied equipment that the customer desired to replace. Consequently, it was rarely in the customer’s interest to consider competitive CPE alternatives, because *even if these could be obtained free of charge* the cost of using them (the PCA charges) would exceed the avoided monthly rental fees for the telco-supplied equipment.

In 1977, the FCC ordered the “Protective Connecting Arrangement” requirement be replaced by a Commission-administered “equipment certification program.”³³ Under this arrangement, manufacturers would be required to comply with FCC-established interconnection standards covering such technical matters as network signalling, voltages, radio emissions, isolation, and the like, as set forth in Part 68 of the Commission’s Rules, and to register their products and the relevant compliance data with the Commission. Moreover, the certification/product registration requirement was imposed both upon customer-owned equipment *and* equipment supplied by local telephone utilities. The program went into effect for single-line telephone sets in 1977 and for multiline business telephone systems (e.g., key, PBX) in July, 1978.

Even though the formidable PCA barrier was thus lifted, CPE competition was still impeded by another local telephone company practice — the *bundling* of CPE rental charges with basic exchange telephone service. Most single line residential and business exchange access lines and Centrex main station lines included, as part of the monthly tariff rate, a standard desk or wall-mounted single line telephone set and the associated inside wiring. Thus, even if a customer desired to replace the “main” telephone instrument with a purchased unit, *there would be no reduction in the monthly rate for telephone service*. While the business telephone systems market began to develop following the demise of the PCA, the continued bundling of the basic telephone set with the monthly local exchange service charge largely precluded widespread consumer-level competition for this equipment.³⁴

32. While most Bell companies had introduced term lease options for certain business key and PBX telephone systems by the mid-1970s, PCAs were offered on a monthly rental basis only.

33. *Proposals for New or Revised Classes of Interstate and Foreign Message Toll Telephone Service (MTS) and Wide Area Telephone Service (WATS)*, CC Docket 19528, *First Report and Order* 56 FCC2d 593 (1975); *Reconsideration* 57 FCC2d 1216 (1976); *Further Reconsideration* 58 FCC2d 716 (1976); *Second Report and Order* 58 FCC2d 736 (1976).

34. In some state jurisdictions, the main telephone set was unbundled from the basic exchange service monthly charge, and the set rental charge (for main and extension stations) was further unbundled into an “equipment” charge and an “extension service” charge, the latter applying whenever the customer used purchased CPE instead of renting it from the telco. While ostensibly intended to recover the costs of telco-provided inside wire, the
(continued...)

With respect to Bell System operating companies, the core local telephone monopoly was thus extended into several different CPE-related adjacent markets: First, since most customer premises equipment (CPE) supplied by the BOCs was at that time manufactured by Western Electric, the “foreign attachment” restriction had the effect of extending the Western Electric monopoly into the adjacent *consumer and business telephone equipment* market. Second, because the BOC tariffs offered CPE exclusively on a “rent only” basis, the “foreign attachment” restriction also extended the BOC core monopoly into the adjacent *equipment financing* market, denying consumers and business users the ability to shop for competitive lease terms or to pay cash and finance the equipment internally. Finally, the tariff restrictions effectively foreclosed the development of a competitive *used equipment* market, because it was customary Bell System practice to destroy equipment once removed from service rather than permit it to compete with newly-produced Western Electric output.

Despite various FCC policy initiatives aimed at expanding competition, the Bell System’s ability to extend its core local telephone monopoly into each and all of these adjacent markets remained largely unimpaired until the implementation of the *MFJ* in January, 1984, when the BOCs’ involvement in the ongoing provision of CPE in connection with basic business and residential telephone service was terminated.³⁵ The *MFJ* required that the BOCs divest themselves of *embedded* (i.e., in-place) CPE, and that these be transferred to AT&T at the time of the divestiture.³⁶ To the extent that BOC tariff rates extant prior to the break-up *bundled* basic exchange telephone service with CPE (e.g., the standard “plain black telephone set” provided to typical

34. (...continued)

extension service charge would often apply *even if the customer provided his own wiring* and in any event produced an effective rental charge savings resulting from self-supply of a telephone set that was quite small, perhaps in the range of 60 to 75 cents, hardly worth the one-time outlays of \$30 to \$50 (the then-current prices) for a customer-owned and maintained instrument.

35. In its *Computer II* decision, the FCC determined that new CPE would be deregulated effective January 1, 1983, and that after that date it could no longer be furnished by a Bell operating company, but would instead have to be provided by some other “fully separated subsidiary.” That action was taken independently of the (then forthcoming) divestiture, which called for the BOCs to transfer their *embedded* base of rental CPE to AT&T at divestiture (January 1, 1984). Following divestiture, BOCs were permitted to reenter the CPE business but only through fully-separated subsidiaries, and were expressly prohibited from *bundling* the price of CPE into the price of basic exchange service. Amendment of Section 64.702 of the Commission’s Rules and Regulations (The Second Computer Inquiry), *Final Decision*, 77 FCC 2d. 384 (1980), and *U.S. v. American Telephone and Telegraph Company*, 552 F. Supp. 131 (D.D.C., 1982), *aff’d sub nom. Maryland v. U.S.*, 460 US 1007 (1983); and *Modification of Final Judgment*.

36. *U.S. v. American Telephone and Telegraph Company*, 552 F. Supp. 131 (D. D.C., 1982), *aff’d sub nom. Maryland v. U.S.*, 460 U.S. 1007 (1983); and *Modification of Final Judgment*. The BOCs were allowed to market *new* CPE on a non-tariffed basis. *MFJ* § VIII A. These activities had to be separated from the BOCs’ exchange telecommunications business. *Id.*, I. A. 2.

residential subscribers), the divestiture of the CPE required that the bundled rate be disaggregated into exchange service and CPE elements.

Long distance services

While there was never any real doubt as to the inapplicability of the natural monopoly model to the provision of CPE or to the manufacture of telecommunications equipment, the situation with respect to *long distance* services was less clear. However, notwithstanding the *possibility* that this segment could viably support multiple suppliers, the question was never put to the test, because the local telephone companies were long permitted to extend their core local monopoly into the adjacent market for long distance ("interexchange") network services by directing all long distance calls dialed in the "routine" (i.e., 1+) manner to the affiliated Bell System long distance network. Indeed, prior to 1971, there was no provision in any tariff or regulation that even dealt with the *possibility* of an interchange of traffic between the local Bell operating companies and non-affiliated long distance carriers.³⁷

In 1971, in its landmark *Specialized Common Carrier* ruling, the FCC posited the possibility that the salutary effects of competition could outweigh the potential losses in scale of production:

Data and other specialized users may require not only a different application of communications technology, but also have service requirements that are heterogeneous in character. ... [These include] service features designed to meet the special requirements of data transmission users, e.g., lower costs, end-to-end compatibility, rapid connection, high reliability, simultaneous two-way transmission, a wide selection of switched speed offering, a low incidence of network busy conditions, interconnection flexibility for user-provided facilities, asymmetry, etc. ... To the extent that customers may be attracted by any or all of these or other features ... it is a reasonable conclusion that the effect of new entry would be expansion of the total communications market. Moreover, competition within the market for specialized services should motivate innovations or modifications in the service offerings and/or facilities by all carriers serving that market and thus produce even greater growth

37. In its *Above 890* ruling, 27 FCC 359, 396 (1959), in which the FCC authorized the award of private microwave licenses directly to end users, the Commission declined to require common carriers to interconnect with these private systems. That policy remained in effect until the *Specialized Common Carrier* ruling, when such interconnection between private and carrier networks was required. *Specialized Common Carrier Services, First Report and Order*, 29 FCC 2nd 870, 940 (1971). *Recon. denied*, 31 FCC 2nd 1106 (1971). *Aff'd sub nom. Washington Utilities & Transportation Commission v. FCC*, 513 F. 2d 1142 (9th Cir. 1975).

rates in total specialized traffic than the growth rates projected in the context of the existing industry structure.³⁸

In *Specialized Common Carriers*, the FCC authorized limited “specialized” private line competition and directed the Bell System to interconnect these services with its local and long distance network. In the mid-1970s, MCI introduced its “Execunet” service, offering for the first time an alternative to the Bell System’s switched interexchange message telecommunications service (MTS). The FCC initially determined that the Execunet service was not authorized under its *Specialized Carrier* ruling, but that finding was subsequently overturned by the D.C. Court of Appeals.³⁹ The FCC established a rulemaking proceeding that would ultimately lead to the creation of “access charges” for interexchange services and “equal access” to local exchange networks for all interexchange carriers (IXCs).⁴⁰

Like the “Protective Connecting Arrangement” requirement in the case of CPE, the pre-“equal access” interconnection arrangements were at best cumbersome and certainly inefficient, requiring customers to dial 25 or more digits to place a call that would require only 8, 10 or 11 digits if placed via the local telephone company. Unlike the PCA requirement, which introduced additional charges for the interconnection of CPE, pre-“equal access” interconnection arrangements subjected the start-up carriers to lower access fees than those implicit in the (then) BOC MTS tariffs. The new entrants persisted in their demands for improved interconnection, including trunk-side access and uniform dialing arrangements. However, it was not until the *MFJ* that equal access⁴¹ became a realistic possibility.

38. *Specialized Common Carrier Services*, 29 FCC 2d 870, 907 (1971).

39. *MCI Telecommunications Corp. v. FCC*, 561 F. 2d. 365 (D.C. Cir., 1977) (“Execunet I”) *cert. denied* 434 US 1040 (1978); *Mandate issued* 580 F. 2d. 590 (D.C. Cir.) (“Execunet II”) *cert. denied* 439 US 980 (1978).

40. See generally MTS and WATS Market Structure, CC Docket No. 78-72, *Notice of Inquiry and Proposed Rulemaking*, 67 FCC 2nd 757 (1978). *Supplemental Order (Phase I)*, 94 FCC 2nd 852 (1983). *Phase I Order Modified on Reconsideration*, 97 FCC 2nd 682 (1983). *Phase I Order Modified on Further Reconsideration*, 97 FCC 2nd 834 (1984). *Phase I Orders Affirmed in Part, Remanded in Part sub nom. National Association of Regulatory Utility Commissioners v. FCC*, 737 F.2d 1095 (D.C. Cir. 1984). *Cert. denied*, 469 U.S. 1227 (1985). *Report and Order (Phase III)*, 100 FCC 2nd 860 (1985). *Phase I Order Modified on Second Further Reconsideration*, 101 FCC 2nd 1222 (1985). *Aff’d sub nom. American Telephone & Telegraph Co. v. FCC*, 832 F.2d 1285 (D.C. Cir. 1987).

41. “Equal access” as defined by the MFJ generally contemplated so-called 1 + dialing of calls carried by non-dominant interexchange carriers, and the ability for customers to “pre-subscribe” to such carriers. The arrangement also contemplated simplified, uniform access code dialing (of the 10XXX form) rather than the cumbersome 7-digit access number followed by a second dial tone and a requirement that a customer enter a “Personal Identification Number” (“PIN”) in addition to the called telephone number. “Equal access” thus contemplated,
(continued...)

Whether or not the provision of long distance service was prior to that time a natural monopoly *per se*, the source of the apparently decreasing average costs was in any event not the same as that for local exchange telephone service. Local telephone service requires an extensive network of distribution facilities dedicated to individual customers, along with the ability to interconnect those dedicated "subscriber lines" with each other and with one or more interexchange network(s). The presence of scale economies in the production of long distance service, to the extent it exists now or existed in the past, is attributable to the transmission and switching capacity of individual network elements and to the properties of networks of such elements.⁴² Thus, even if, for the sake of argument, each of these two adjacent markets (local telephone service and long distance interexchange service) had at one time been natural monopolies, that condition would not itself have justified or required that the owner of one also control the other. However, the control of the long distance business by the owners of the local telephone exchange monopolies effectively foreclosed even the *possibility* of competitive development in the former.

It was not until the *MFJ* structurally dismembered these relationships by imposing an explicit "line of business restriction" excluding the BOCs from competing with interexchange carriers beyond LATA boundaries,⁴³ *notwithstanding the presence of the "equal access" requirement*, that any serious attempt at creating real competition in the long distance market was able to commence. The "long and winding road" to competition is graphically displayed in Figures 1.3 through 1.6.

41. (...continued)

among other things, that the calling party's telephone number would be passed to the interexchange carrier to be used for authorization and billing purposes. Equal access did not necessarily require *identical* technical interconnection, but only some sort of functional equivalency. In fact, in the ensuing years non-dominant IXC's argued that longer post-dial delays due to the use of adjunct equal access processors, along with less than ubiquitous availability of 1 + dialing, disadvantaged them relative to AT&T.

While the "equal access" debate had been underway before the FCC in CC Docket 78-72 concurrently with the litigation of the DoJ/Bell System antitrust case, the Bell System persisted in its staunch opposition to equal access throughout the FCC's *MTS/WATS Market Structure* proceeding. The FCC's involvement in the equal access issue was thus primarily after-the-fact, addressing implementation and pricing concerns, rather than the underlying principle itself. Significantly, as subsequent "interconnection" and "access" issues have come before the FCC in the decade following the divestiture, the Bell Operating Companies have continued to resist and oppose many extensions to equal access. See *Advanced Intelligent Network, Notice of Proposed Rulemaking*, CC Docket No. 91-346, August 31, 1993, at 8., *Expanded Interconnection with Local Telephone Company Facilities, Report and Order and Notice of Proposed Rulemaking*, CC Docket No. 91-141, October 19, 1992, at 4-5.

42. Selwyn, Lee L., "Assessing Market Power and Competition in the Telecommunications Industry: Toward an Empirical Foundation for Regulatory Reform," *Federal Communications Law Journal* 40 (April, 1988).

43. *MFJ*, § II.D.

2.3 Open network policies are no match for fundamental structural reforms

Pro-competitive policies, such as ONA, are clearly *necessary* to foster a competitive telecommunications marketplace, but in no sense are they, by themselves, *sufficient* to limit the local telephone monopolies' ability to dominate and perhaps to monopolize adjacent markets. And therein lies one of the central distinctions between the types of "open network" and "open entry" policies that have been pursued by federal and state regulators and the fundamental *structural reforms* that were the centerpiece of the *MFJ*. Regulation was and continues to be largely ineffective at preventing the BOCs from leveraging their core monopoly so as to monopolize adjacent markets; the solutions contained in the *MFJ* — divestiture and line of business entry restrictions — have proven themselves to have been the only truly effective means of protecting adjacent markets from BOC dominance. Unless a solid and impenetrable barrier is maintained between those segments of the larger telecommunications industry for which a regulated "natural monopoly" model applies and those for which viable and effective competition can exist and develop, the local exchange telephone monopolies will retain both the ability and the economic incentives to dominate these adjacent markets.⁴⁴

Prior to its break-up, the pre-divestiture Bell System operated as a vertically integrated mega-firm with extensive intra-Company transactions. These relationships and transactions afforded the pre-divestiture Bell System the ability to leverage its dominance over the local telephone monopoly to control the adjacent telecommunications equipment manufacturing, customer premises equipment retailing and financing, and long distance markets. The *MFJ* sought to restrict this ability by (a) separating the local exchange monopolies (the BOCs) from the adjacent long distance, manufacturing and CPE businesses, and (b) restricting the BOCs from *reentering* these and the newly-developing adjacent "enhanced services" lines of business.

The proof of this can be seen in the results of the first decade of the post-divestiture era: Competition has in fact flourished in several of these formerly monopolistic adjacent markets, but significantly little or no effective competition has developed in markets in which BOC entry is still permitted. Thus, the *MFJ* "experiment" has confirmed the critical importance of line of business restrictions in fostering competition and in preventing BOC domination of adjacent markets.

44. Despite state commission authorization of competitive entry into the intraLATA toll market in some jurisdictions, the BOCs still dominate this market. In this case, the failure of the BOCs to make 1+ presubscription available on an intraLATA basis has acted as a "solid and impenetrable wall." See Figure 1.5.

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- In the interLATA long distance market, AT&T's predivestiture market share of nearly 100% has been reduced to about 60%.⁴⁵ MCI and Sprint have constructed extensive high-capacity competitive networks. Smaller interexchange carriers actively serves approximately 14% of the total interstate toll market.⁴⁶ In sharp contrast, BOC dominance of the *intraLATA* market for dial-up toll services, even in those jurisdictions in which competitive entry is permitted, likely remains well above the 95% level. Unlike the case with *interLATA* services, the local telephone monopoly both provides essential "bottleneck" access services to the long distance carriers and also competes with those carriers for end-user *intraLATA* toll business. The BOCs control the essential facilities needed to provide their competitors with the highly coveted full "equal access" interconnection (in the form of 1+ presubscription).⁴⁷ In addition, BOCs have set the margin between the price charged to competing carriers for access services and the LEC's price to end-users for *intraLATA* toll services at extremely low levels. Together, these conditions have precluded effective competition from developing in the *intraLATA* toll services market. Overall, approximately half of total interexchange carrier toll revenues are paid over to local exchange carriers for access services. However, in the case of *intraLATA* toll services (where average toll rates may be lower than for *interLATA* calls because of the shorter distances involved), the IXC's pay LECs a larger percentage of total *intraLATA* toll revenues in access charges.
- While "competitive access providers" ("CAPs") like Teleport Communications Group (TCG) and Metropolitan Fiber Systems (MFS) have exhibited a substantial rate of growth (from a base of zero) in the past several years, they still account for less than 1% of the \$26-billion LEC access services market.⁴⁸ The BOCs once again control the essential facilities CAPs require to gain access to co-location arrangements in BOC central offices, and to operations support systems (OSSs) for purposes of fault identification and maintenance. Up to now, the BOCs have restricted the type of services to which CAP facilities may be interconnected. It is only through affirmative efforts by

45. FCC Industry Analysis Division *Long Distance Market Shares*, June, 1993, at 14.

46. *Id.*

47. As of this writing, only a handful of state commissions have authorized "presubscription" on a 1+ basis to competing *intraLATA* long distance carriers, and in none of those states has "presubscription" been fully implemented. Proceedings initiated for the purposes of addressing this issue have been initiated in 16 states.

48. 1992 LEC access revenues \$26.1-billion (FCC *Statistics of Communications Common Carriers*, 1992); CAP access revenues \$250-million (Sazegari, Steve A., "The Shape of Competition in the Local Loop," *Business Communications Review*, March, 1992, at 49). The \$250-million in CAP access revenues encompasses CAP revenues for services that compete with the LEC's private line services and not just LEC access services, so that the 1% CAP "access market" share estimate is likely significantly overstated.

the FCC and by several state commissions to impose regulatory prescriptions upon the BOCs that these interconnection barriers are now being ever so slowly reduced.⁴⁹

- Access by enhanced service providers to unbundled network features and functions, long a goal of FCC policy, has been severely limited by persistent BOC resistance to such requirements. Although nominally open to non-affiliated providers, BOC divisions and corporate affiliates now control the majority of the public “voice mail” service market. BOCs withheld broad-scale introduction of these services for nearly ten years following their initial development,⁵⁰ and resisted for four or more years following the FCC’s *Computer III* adoption of “Open Network Architecture” making available to potential voice mail competitors the interconnections and functions necessary to support a competitive voice mail service.⁵¹ In effect, the availability of interconnection arrangements were withheld from potential competitors until the BOCs were themselves ready to enter the voice mail market.⁵² In other instances, the BOCs sought to require competitors to purchase unbundled network functions that are needed

49. Expanded Interconnection with Local Telephone Company Facilities, CC Docket No. 91-141: *Report and Order and Notice of Proposed Rulemaking*, 7 FCC Rcd 7369 (1992). New York State Public Service Commission, *Proceeding on Motion of the Commission to Review Regulatory Policies for Segments of the Telecommunications Industry Subject to Competition* (Case 29469), and *Proceeding on Motion of the Commission to Review Telecommunications Industry Interconnection Arrangements, Open Network Architecture, and Comparably Efficient Interconnection* (Case No. 88-C-004), *Order Regarding OTIS II Compliance Filing*, May 8, 1991. Illinois Commerce Commission, *Interconnection Rulemaking*, Docket No. 92-0398. W. Va. Public Service Commission, *Expanded Interconnection for Intrastate Special Access*, Case No. 92-1267-T-GI, February 11, 1993. North Carolina Utilities Comm., *Expanded Interconnection with Local Telephone Facilities*, Docket No. P-100, Sub 121, Feb. 10, 1993. NJ Board of Regulatory Commissioners, *Expanded Interconnection with Local Telephone Facilities*, Docket No. TX93010004, Feb. 11, 1993.

50. Hanson, B., R. Nacon, and D. Worrall, “New Custom Calling Services,” *Bell Laboratories Record*, June 1980, at 174-88.

51. These included Call Forward-Busy/Don’t Answer, Message Waiting (Stutter dial tone) indication, calling number identification.

52. See, e.g., Georgia Public Service Commission (GA PSC), Docket No. 4000-U, *In the Matter of the Commission’s Investigation in Southern Bell Telephone and Telegraph Company’s Provision of MemoryCall Service*, June 4, 1991. The Commission found that “the record in this case demonstrates not only that [Southern Bell Telephone] has the opportunity and incentive to use its monopoly control of the local bottleneck to discriminate against competitors regarding access to the local network, it has in fact done so with respect to access to the local network by competitors of MemoryCall [voicemail] service.” The FCC later granted a BellSouth petition requesting that the Commission preempt the GA PSC Order temporarily prohibiting Bell from providing its voicemail service in the state until regulations to deter anticompetitive conduct could be developed. The FCC preempted the GA PSC on the grounds that voicemail is an interstate, as well as an intrastate service, and the GA PSC ruling conflicted with federal rulings on enhanced service provision. The FCC did not overturn the GA PSC finding that BellSouth engaged in anticompetitive conduct, and specifically indicated that preemption did not preclude the GA PSC from further investigating anticompetitive behavior or fashioning regulatory controls.

to provide voice mail service on terms (e.g., on a “bi-directional measured basis”) that were discriminatory, not cost-based, and quite disadvantageous to their business.⁵³

2.4 Undiminished BOC market power, despite an erosion of the scope of the BOC monopoly

A basic principle of economic theory holds that the amount of monopoly power that a monopolist may exercise in a market is essentially a constant, so long as the monopolist retains monopoly control over at least one critical (“bottleneck”) element of the overall production process. To be sure, the *extensiveness*, both vertical and horizontal, of the LEC monopoly has been eroded (see Figure 2.4): LECs are no longer active in certain businesses, and they are no longer the only source for several of the services that they continue to offer, such as high-capacity dedicated access and, perhaps in the near future, for *some* switched access and transport elements and for the basic subscriber dial tone line, as well (see Figure 2.5). However, the relevant question with respect to the issue of *MFJ* line of business relief, is not whether certain components of the traditional BOC monopoly have now been opened to competition, but rather whether the *de facto* monopoly that is still enjoyed by the BOCs with respect to any *remaining* service or network elements is sufficient to permit the BOCs to extend that monopoly into, and thereby to dominate, adjacent markets including those from which their entry is currently proscribed.

As we have noted, the line of business restrictions set forth in the *MFJ* have been singularly successful in fostering competition in precisely those markets in which BOC entry is prohibited. By contrast, in those *other* adjacent markets in which BOC entry was not foreclosed by the divestiture decree, the BOCs have been singularly successful in limiting their competitors to a minor fraction of the total market. Current legislative initiatives aimed at removing the *MFJ* line of business restrictions would thus dismantle one of the most central and effective features of the *MFJ*, and in so doing, would place these very markets and their competitive incumbents at considerable risk.

The basic *theory* underlying proposals to eliminate the decade-old BOC entry restrictions holds that competition in these adjacent segments has developed to a degree there is

53. See, e.g., Florida Public Service Commission Docket No. 760842-TP (1988), Georgia Public Service Commission Docket No. 3896-U (1989), and Louisiana Public Service Commission Docket No. U-18656 (1990), in which BellSouth companies, Southern Bell and South Central Bell proposed tariffs for “bi-directional usage rate service” designed specifically to furnish exchange network access to/from enhanced service providers (ESP). Although described as an “optional” offering, the bidirectional service was to be mandatory for any ESP that wishes to utilize certain adjunct services that, more generically, fall within the scope of the telephone company’s Open Network Architecture (ONA) offerings.

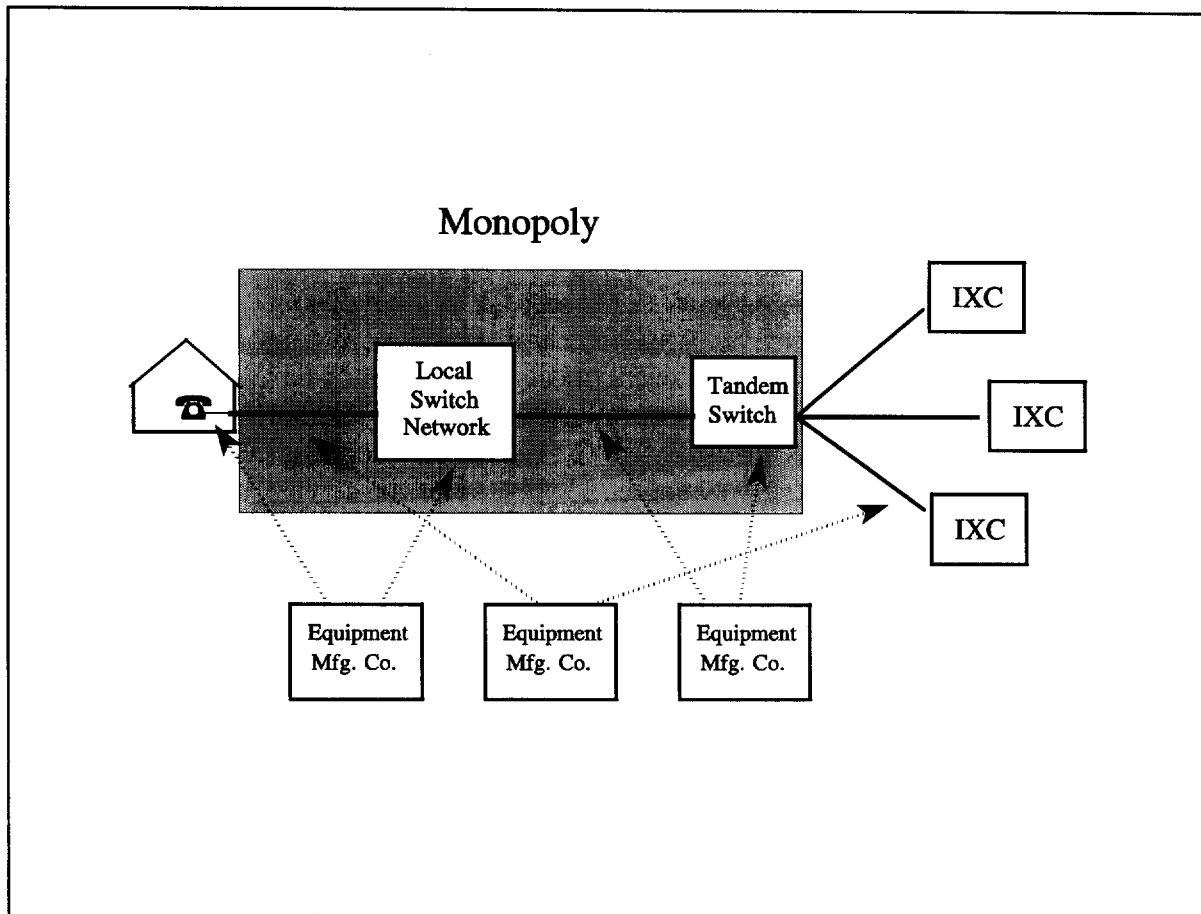


Figure 2.4. The scope of the present LEC telephone monopoly

“no substantial possibility” that BOC entry could diminish competition.⁵⁴ At best, such a perception is highly speculative, and is certainly unprovable based upon any existing fact or condition. The BOC monopoly in core local telephone markets is still extensive and pervasive, and the potential that the competitive gains achieved in the past few years could be easily reversed through leverage by the BOCs of their market power in core services markets remains strong.

54. See Proposed H.R. 3626, “Antitrust Reform Act of 1993,” (Brooks-Dingell Bill) Section 101(b)(3)(D)(i), p. 6. which uses the standard as a test for when BOC entry should be allowed and does not judge whether the standard has been met.

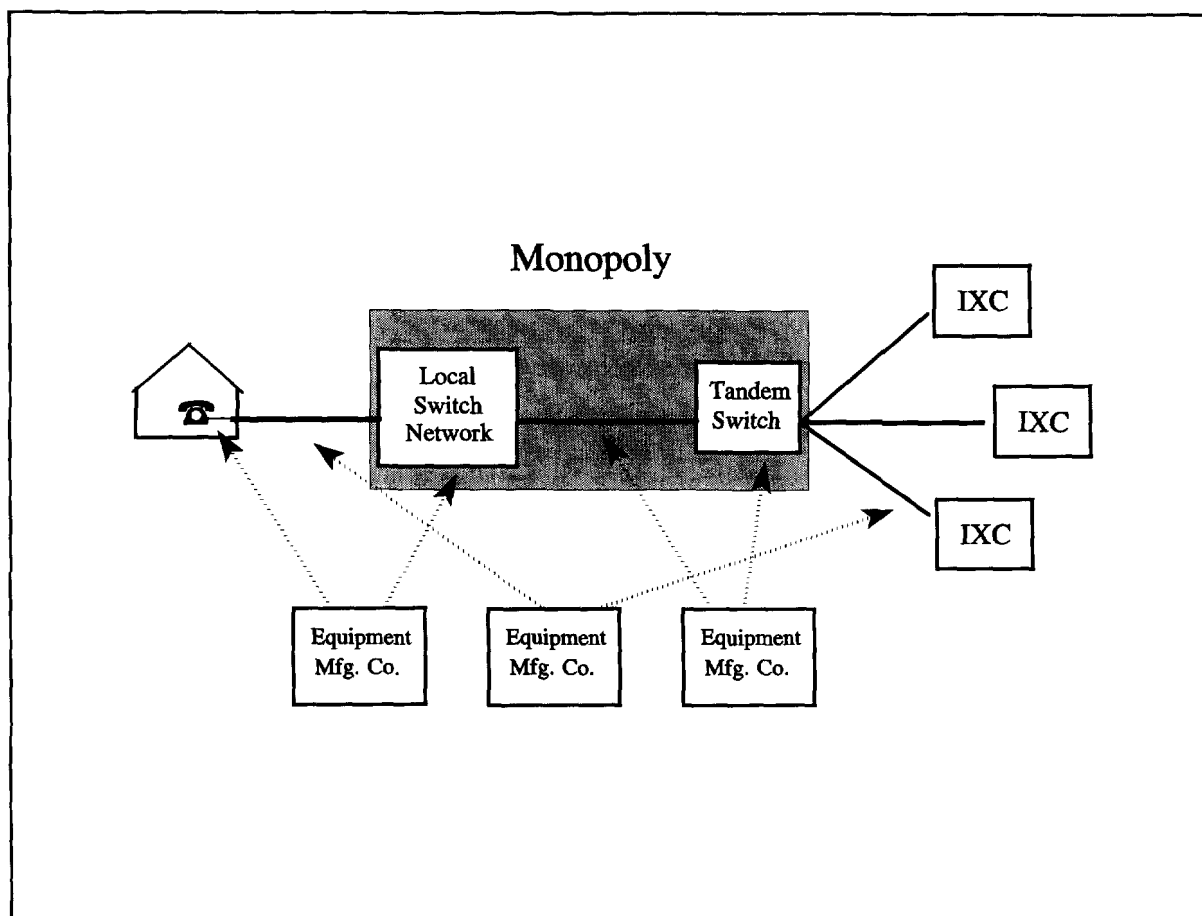


Figure 2.5. The scope of the future LEC monopoly

2.5 Tests of market power and dominance

Traditional tests of market power tend to focus upon static properties of market segments, such as the respective market shares of the incumbents, ratios of price to marginal cost, and elasticities of demand and supply.⁵⁵ Confronted with factual conditions that would require a finding of market dominance and effective monopoly for most BOC services, the BOCs have sought to rely (at least implicitly) upon an alternative economic theory, "market contestability," as a standard for assessing the dynamic properties of their markets and the extent of their market power.⁵⁶ Under this theory, even the *potential* entry of one or more rivals, let alone their actual presence, is held to be sufficient to

55. See, e.g., Landes, William and Richard Posner, "Market Power in Antitrust Cases," *Harvard Law Review*, 5 (March 1981), at 937-96.

56. See, e.g., Baumol, W., J. Panzar, & R. Willig, *Contestable Markets and the Theory of Industry Structure* (1982).

constrain the incumbents' market power and to discipline their pricing behavior. The theory of market contestability, however, still requires that entry be *possible* as an economic matter, implying that barriers to such entry not be so formidable as to make the potential impact of a future rival a nullity.⁵⁷ In applying this theory, the BOCs have sought to portray the absence (or removal) of *legal* barriers to entry *equivalent* to the absence of *economic* barriers, claiming that the mere presence of even a single fringe competitor with a minuscule share of the aggregate BOC market satisfies the market contestability test. "Market contestability" as utilized by the BOCs is thus a far simpler standard for the incumbent monopolies to satisfy, resting upon unprovable speculations about the future and upon possibilities, rather than facts, of market entry.

In applying the market contestability theory, the BOCs have conveniently focused their attention and their "analyses" upon the *totality* of their activities, ignoring wherever possible individual elements some of which may not *standing alone* satisfy even their weak tests of competition. Thus, the presence of CAPs in the special access market and the *potential* for entry in the future by cable television companies into the dial tone line market are advanced as sufficient "proof" that all BOC markets are "contestable" and that the BOCs' ability to dominate adjacent markets is forever foreclosed.⁵⁸ Most of these theories, however, tend to ignore the effects of the important demand and supply *externalities* that uniquely characterize network-based industries, such as the provision of local exchange telecommunications services, and which have created formidable economic barriers that no legal initiative can hope to break down soon.

Network externalities and barriers to entry in the local exchange market

By its very nature, the service being furnished by a LEC involves an interconnection between at least two different customers. More generally, the service being offered to any one LEC customer is the *ability* to communicate with any other customer served by the LEC's network, or to be interconnected with other non-LEC networks which are themselves connected to the LEC's network. The limited provision of competitive *access*, whether in the form of a high-capacity special access service or a residential dial tone line, in no sense constitutes a *complete* competitive offering. In fact, no one would seriously consider the use of alternative access or dial tone services *unless full LEC network interconnection were assured*, a point that has been expressly recognized in a series of recent

57. See, e.g., Baumol, W.J., "Deregulation and Residual Regulation of Local Telephone Service," *AEI Studies in Telecommunications Deregulation*, March 3, 1993, Chapter 5.

58. The voices of the "market contestability" school are, of course, yet to be heard as to the consequences of RBOC ownership of most cable television systems, a likely effect of the Bell Atlantic/TCI merger that was announced on October 13, 1993.

FCC actions dealing with expanded interconnection and intelligent networks.⁵⁹ The presence of a ubiquitous LEC distribution, switching and transport network presents a formidable source of market power that will not be materially diminished by limited competition for access links or other selected network elements.

Figure 2.6 demonstrates the continuing requirement for LEC involvement in providing connectivity even where, for example, a single cable television company may be able to amass a 10% share of the dial tone line market in its service area. As shown in Figure 2.6, even under this optimistic assumption of cable company penetration into the dial tone line market, the LEC would still be required to carry fully 99% of all local calls. The only local calls that could completely bypass the LEC's local exchange network would be those among the cable company's own subscribers. Assuming that a given cable-served customer had no greater likelihood of calling another cable-served subscriber than of calling any given LEC-served user, only 10% of 10%, i.e., 1%, of all local calls could completely bypass the LEC. Indeed, if LEC connectivity *among multiple cable systems* within the same metropolitan area were required so as to form a "network of networks," the LEC involvement would likely exceed even this 99% market share level.⁶⁰

This theoretical analysis of ongoing LEC involvement even in the face of significant competitive dial tone line penetration can be readily confirmed by actual experience with the principal *existing* alternative form of public network access — cellular telephone services. While the number of cellular subscribers now exceeds 10-million, or about 10% of the total national residential subscriber base, *virtually all cellular calls are completed to or originate from landline telephones*. In testimony offered in June, 1993 by Pacific Telesis Group before the California Public Utilities Commission, the Company estimated that some 90% of all calls originated by its cellular subscribers generated landline revenues for

59. Advanced Intelligent Network, *Notice of Proposed Rulemaking*, CC Docket No. 91-346, August 31, 1993, at 8.; Expanded Interconnection with Local Telephone Company Facilities, *Report and Order and Notice of Proposed Rulemaking*, CC Docket No. 91-141, October 19, 1992, at 4-5.

60. Significantly, because cable franchises were typically awarded at a *municipal* level, most major metropolitan markets are served by a number of separate cable systems. Thus, even if *collectively* all of the systems that serve a given area were to garner 10% of the dial tone line market, a sizable fraction of all cable-to-cable calls would necessarily require an interconnection *between* different cable systems. Unless the various cable systems collaborated to develop an inter-system switching network for purposes of handling the inter-system share of the 10% of 10% (or 1%) of total calling that could in theory entirely bypass the LEC, the LEC might still be involved in providing the inter-system switching and transport connection. Thus, the LEC's share of total local switching and transport traffic could well be even greater than 99%.

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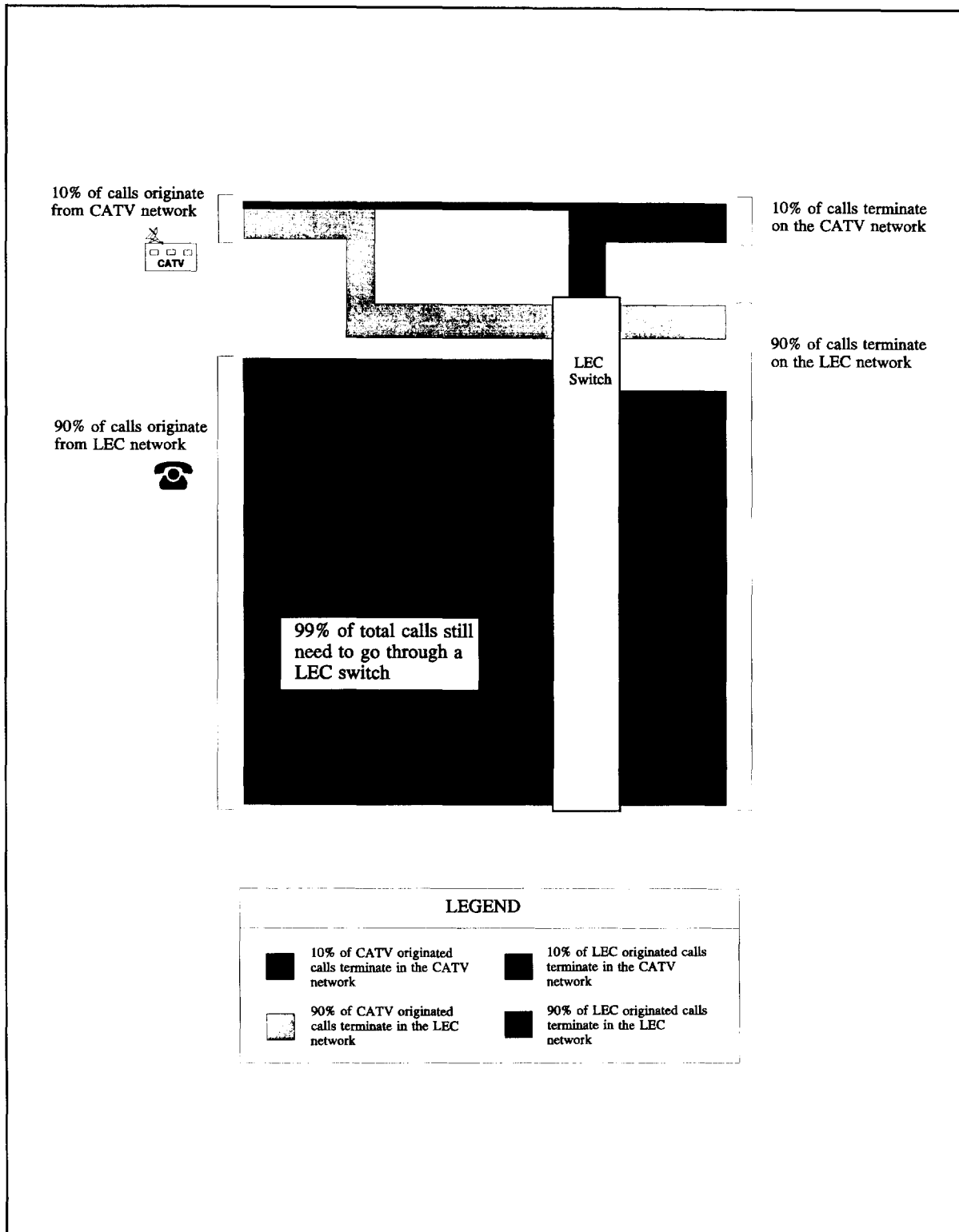


Figure 2.6. Only 10% of CATV originated calls, or 1% of total calls, completely bypasses the LEC network

Pacific Bell.⁶¹ We are aware of estimates indicating that some 98% of all cellular calls involve landline interconnections. If one views cellular as an alternative form of “access” to the traditional wire loop, the lack of commonality of interest *among individual cellular subscribers* vis-à-vis the larger community of landline telephone users underscores the central, “bottleneck” role of the landline local exchange telephone monopolies in *interconnecting* users of what might otherwise constitute competing services.⁶²

This property of networks to interconnect members creates *externalities* with respect both to supply and to demand. On the supply side, because networks generally have high fixed costs, the larger the population of members, the lower will be the average unit cost *per member* for connectivity. At the same time, increasing the *availability* of other network members makes the connectivity offered by the network more valuable to each participant, in effect increasing the potential demand for network access generally. Hence, the presence of externalities results simultaneously in reducing unit cost and in recursively increasing total demand, and thus affords an established LEC network characterized by extensive, near ubiquitous connectivity with decisive control over bottleneck exchange facilities essential for any competing access or dial tone entrant.

Networks as the source of market power

It is this property of *interconnectedness* among individual network components that creates value for network participants and which thereby establishes market power for the network’s owners. In the past, efforts to identify and to quantify the presence of competition in telecommunications markets have tended to focus on the ability of individual suppliers or end users to acquire and to deploy transmission and switching facilities that were separate from those associated with public common carrier networks. Often relying on purely anecdotal evidence, the presence of competition would be asserted (consistent with

61. See prefiled direct testimony of Jerry A. Hausman for Pacific Telesis Group, California Public Utilities Commission Investigation (I.) 93-02-028, June 15, 1993, at 6:

... about 90% of all cellular calls go over the landline network, and cellular is largely a complement to landline usage, not a substitute. Thus, cellular has led to increased use of the landline network. This increased use has led to many millions of dollars of increased revenues (and contribution) to [Pacific] Bell from three sources: (1) intraLATA long distance calls (2) access revenue from interLATA long distance calls and (3) interconnection revenue for calls originated or terminated on the landline network. Given that the price for each of these services is well in excess of [Pacific] Bell’s incremental cost to provide the services, these revenues have led to a significant contribution to the joint and common costs of Bell’s landline network.

62. The majority of cellular systems in the US are owned by BOCs and other local exchange telephone monopolies. However, there is no evidence that this bottleneck switching function of the wireline LEC is materially different with respect to situations in which a cellular system is LEC-owned or non-LEC-owned.

the theory of market “contestability”) if, for example, it could be shown that an individual user was capable of constructing his own private microwave or fiber optic transmission facility or that a small, niche market provider had entered, was planning to enter, or perhaps was merely *permitted* legally to enter, a particular market segment. The matter of interconnectivity among these isolated facilities was generally ignored, largely because of the failure to recognize the role of centralized control of network connectivity and the large economies of scale and scope that characterize large network structures.

Most telecommunications network resources, particularly those associated with transmission, switching and distribution, involve large fixed capital investments that can be most efficiently recovered when the resource is shared among a large number of individual users or routes. Thus, the degree to which the owner of network resources is able to achieve an efficient scale and scope of operations will materially affect its ability to achieve and maintain an advantageous market position vis-à-vis present and future rivals. As we shall show, this property is intrinsic to large, complex networks and to the entities that control them.

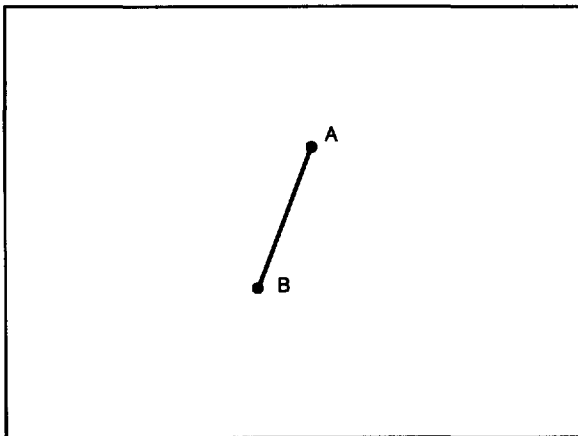


Figure 2.7 Simple two-point network

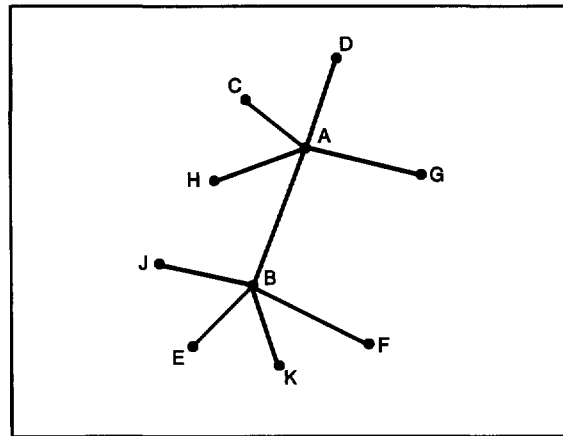


Figure 2.8 More complex network

Several examples are useful in illustrating this phenomenon. Figure 2.7 below above a simple two-point network interconnecting two locations, A and B. In fact, the *only* traffic that this simple network is capable of carrying is that generated by users at each of these two locations to one another; hence, the total cost of the facility must be recovered from these users. Figure 2.8 illustrates a more complex network in which the A-B link is interconnected to a number of other transmission links. In this case, in addition to carrying the A-to-B traffic, the same A-B link also carries traffic between C and B, D and B, A and E, and C and F, and numerous other combinations. *As a general principle, the more segments in a communications network, the more traffic that will be handled by any individual segment*, all other things being equal. This property of networks engenders significant

economic advantages to common carriers vis-à-vis individual users, and to large, ubiquitous common carriers vis-à-vis small, more specialized service providers.⁶³

Networks and market power in the airline industry

This property of networks and its role in conferring market power on its owner can be readily demonstrated in the *post-deregulation* US airline industry, where the *legal* barriers to entry and competition have been largely eliminated and have ostensibly been replaced by competitive market forces.⁶⁴ In fact, seen in the aggregate, no single US carrier controls more than 20% of the total US airline market.⁶⁵ Nevertheless, individual airlines do dominate specific geographic markets around network “hubs,” often achieving market shares exceeding 80%. An airline “hub” is in fact a “switch” through which individual passengers change planes (i.e., interconnect individual route segments) to complete their respective journeys. It is instructive to examine the nature of “hub” markets, the manner in which market dominance at the “local” level can be accomplished, and the role and properties of the “network” itself in creating the conditions that are hospitable to such dominance.

In the pre-deregulation days, the Civil Aeronautics Board (CAB) had defined a “market” as generally consisting of a specific route between two (or a relatively few) cities.⁶⁶ Airlines would seek authority to enter and/or exit such individual “route” markets by making application to the CAB for each such route in question. Although airlines would each assemble collections of individual routes to form larger networks, the CAB’s approach to regulation generally limited the actual economic benefits flowing from such networks to mainly operations and maintenance matters.⁶⁷ The agency, for example, regulated fares and in so doing required all airlines to charge the same fare for travel between the same

63. For example, local telephone companies can aggregate switched and dedicated services onto the same common network transport links, enabling them to achieve a far greater mass and level of utilization than a more specialized rival, such as a Competitive Access Provider (“CAP”) that only supplies circuit facilities for dedicated services.

64. Airline Deregulation Act of 1978, 49 USC § 1302(a)(9), (a)(10) (1982).

65. “Air Transport 1993—The Annual Report of the US Scheduled Airline Industry,” publication of the Air Transport Association of America. This figure is based on the percentage of total industry revenue passenger miles of the largest US airline. A revenue passenger mile is the average revenue from one fare paying passenger transported one mile.

66. See Civil Aeronautics Act of 1938, § 401, 51 Stat. 977 (repealed 1958).

67. For a discussion of the economic effects of regulation in the airline industry, see, Douglas, George W. and James C. Miller III, *Economic Regulation of Domestic Air Transport: Theory and Policy*, (Washington: Brookings Institution, 1974).